Prepared by the Nashua Regional Planning Commission

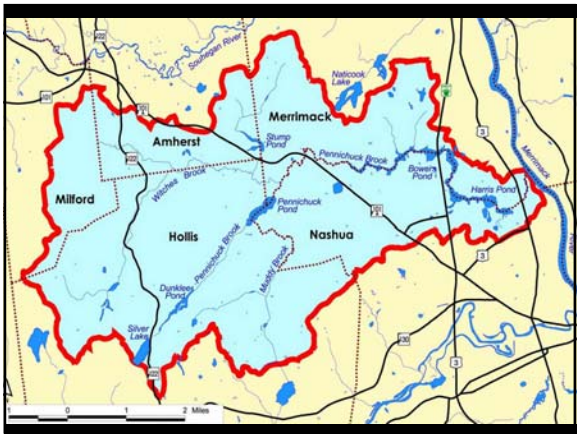
Pennichuck Brook Watershed Buildout Analysis

Introduction

- The Pennichuck Brook Watershed
- Purpose of Project
- Process
  - Existing Conditions
  - Buffer Analysis
  - Impervious Surface Analysis
  - Buildout

The Pennichuck Brook Watershed

- 17,700 Acres in:
  - City of Nashua
  - Town of Amherst
  - Town of Hollis
  - Town of Merrimack
  - Town of Milford
- Major public water supply area.



Purpose of the Project

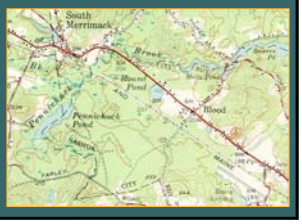
Devise a series of maps that will identify future impacts of development in the Pennichuck Brook Watershed (such as the amount of impervious surface) as well as areas that could be protected through a series of connected buffers in the watershed.

Process

- Existing Conditions
- Buffer Analysis
- Impervious Surface Analysis
- Buildout

Existing Conditions

- Community Boundaries
- Watershed Boundaries
- Streets
- Waterbodies
- Parcels

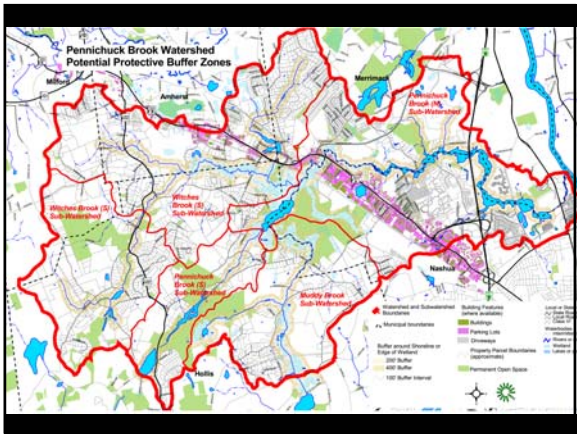


Buffer Analysis

- Buffers are an effective and cost efficient way to improve water quality:
  - Reduce runoff
  - Prevent flooding
  - Decrease nutrient loading
  - Provide wildlife habitat
  - Contribute to quantity of open space

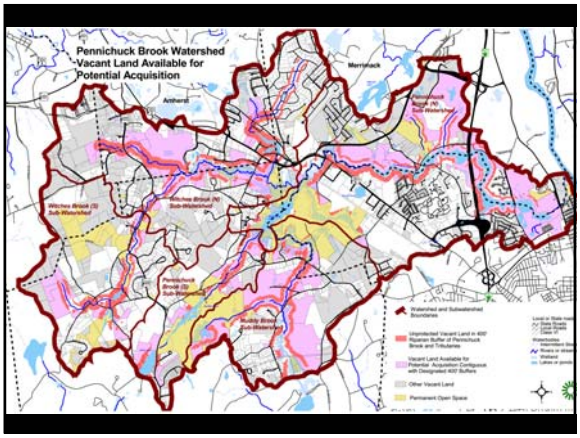
Buffer Analysis

- Process:
  - assign generalized land uses to each parcel
    - residential, non-residential, conservation, transportation facilities.
  - research and plot existing protected buffers (as required by local ordinance, Pennichuck Corp., and DES Rules)
  - map potential protective buffer zones (400 feet from the water's edge).



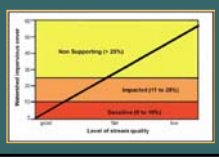
Buffer Analysis

- Process:
  - assign generalized land uses to each parcel
    - residential, non-residential, conservation, transportation facilities.
  - research and plot existing protected buffers (as required by ordinance, deed restrictions, etc.)
  - map potential protective buffer zones (400 feet from the water's edge).
  - remove existing conservation and developed lands from the buffer areas.
  - Analyze remaining vacant land for potential acquisition.



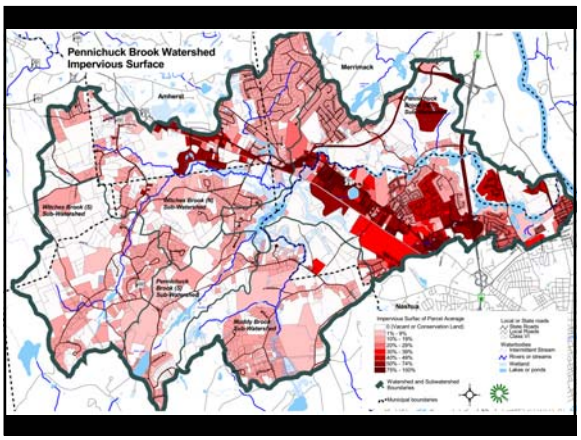
Impervious Surface Analysis

- Impervious surfaces increase the rate by which pollutants accumulate and run off into water bodies.
- Research conducted by the Center for Watershed Protection found that as little as 11% impervious cover in a watershed can result in degraded water quality.



Impervious Surface Analysis

- Process:
  - Utilize Center for Watershed Protection "multipliers" - each multiplier indicates the "typical" amount of impervious surface occupied by each land use.
  - Calculate the area of each land use in the watershed.
  - Determine the approximate area of impervious surface occupied by each land use.
  - Existing impervious surface = 2,423 acres or 14% of total watershed.

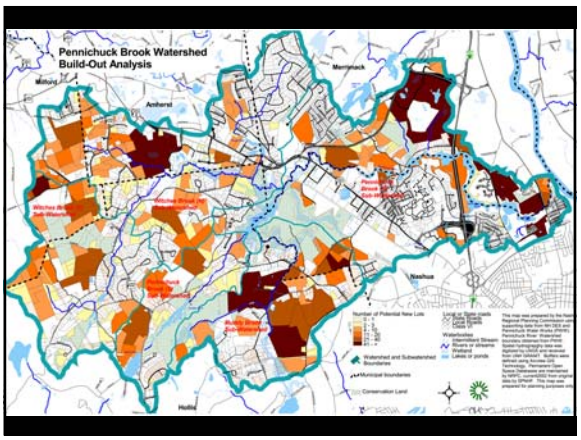


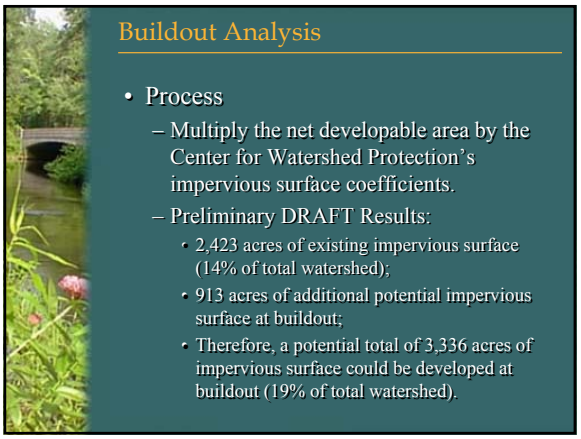
Buildout Analysis

- Provides a theoretical assessment of the quantity of new development that could be constructed in a given land area based on a community's land use regulations.
- Results used to estimate the future area of impervious surface in the watershed.

Buildout Analysis

- Process:
  - Identify undeveloped land.
  - Remove areas with wetlands, steep slopes, floodplains, agricultural soils, and established buffers.
  - Remove 5% for design and rights-of-way.
  - Determine "net developable area" for each land use.
  - Determine # of lots that could be developed at buildout.




Buildout Analysis
• Process
– Multiply the net developable area by the Center for Watershed Protection's impervious surface coefficients.
– Preliminary DRAFT Results:
• 2,423 acres of existing impervious surface (14% of total watershed);
• 913 acres of additional potential impervious surface at buildout;
• Therefore, a potential total of 3,336 acres of impervious surface could be developed at buildout (19% of total watershed).


Questions and Comments